

CLAIMS

We claim:

1. A memory storage disk handling system, comprising:
a housing;
5 an elevator pin mounted on the housing for lifting disks;
a servo motor attached to the housing; and
a linkage assembly attached between the servo motor and the
elevator pin.
2. A memory storage disk handling system as set forth in claim 1,
10 wherein the servo motor includes a shaft, the linkage assembly includes an arm
mounted on the shaft, whereby rotation of the shaft pivots the arm to lift the
elevator pin.
3. A memory storage disk handling system as set forth in claim 2,
15 wherein the arm has a fixed end and a moveable end, the fixed end mounts on the
shaft, and the moveable end includes a cam surface that cams against the elevator
pin when the arm pivots.
4. A memory storage disk handling system as set forth in claim 3,
wherein the elevator pin has an axis, and a base that lies in a plane perpendicular
20 to the axis, the elevator pin includes a slot that parallels the base, the cam surface
cams within the slot to lift the elevator pin in the direction of the axis.
5. A memory storage disk handling system as set forth in claim 3,
wherein the elevator pin has an axis, a longitudinal surface and a cam pin

extending radially outward from the longitudinal surface, the moveable end of the arm defines a slot that cams against the cam pin when the arm pivots.

6. A memory storage disk handling system as set forth in claim 2,
wherein one end of the arm mounts on the shaft and the other end of the arm
5 mounts on the elevator pin, the elevator pin has an axis, the servo motor pivots the
arm to lift the elevator pin in the direction of the axis and the elevator pin rotates
about the axis when the arm lifts the elevator pin.

7. A memory storage disk handling system as set forth in claim 1,
wherein the base includes a position sensor with a mechanical arm, the arm
10 engages the elevator pin to detect elevator pin position.

8. A memory storage disk handling system as set forth in claim 1,
wherein the base includes a position sensor, the position sensor includes an optical
sensor element.

9. A memory storage disk handling system as set forth in claim 1,
15 wherein the base includes a position sensor, the position sensor includes a
magnetic sensor element.

10. A memory storage disk handling system comprising:
a housing defining a hopper for receiving disks;
an elevator pin mounted on the housing for lifting disks into the
20 hopper; and
the hopper being configured for aligning lifted disks into a stack and
includes at least one pawl for holding lifted disks in the hopper.

11. A disk handling system as set forth in claim 10, wherein the hopper includes hollow portions and at least two pawls, the pawls being slidably mounted within the hollow portions.

12. A disk handling system as set forth in claim 10, wherein the hopper includes three posts oriented to surround lifted disks, at least one pawl mounts on each post.

13. A disk handling system as set forth in claim 12, wherein each post includes a hollow portion, the pawls being mounted at least partially within the hollow portions of the posts.

14. A disk handling system as set forth in claim 13, wherein the pawls are slidably mounted within the hollow portions of the posts so that lifting a disk slides the pawls into the hollow portions, and after the disk is lifted, the pawls extend from the hollow portions to hold the disk in the hopper.

15. A disk handling system as set forth in claim 11, wherein each pawl includes a slot and the stack retainer includes pins that insert through the slots to hold each pawl, the pins and slots cooperate to enable the pawls to slide.

16. A disk handling system as set forth in claim 11, wherein each pawl includes an end with a hook for holding lifted disks.

17. A memory storage disk handling system, comprising:
a housing defining a hopper for holding disks;
an elevator pin mounted on the housing for lifting disks into the hopper;

a servo motor attached to the housing;
a linkage assembly attached between the servo motor and the
elevator pin for lifting the elevator pin in response to the servo motor; and
the hopper defines a base and includes a stack retainer means
5 extending from the base for aligning disks in a vertical stack, the stack
retainer means includes more than one pawl for holding lifted disks.

18. A memory storage disk handling system as set forth in claim 17,
wherein the servo motor includes a shaft, the linkage assembly includes a single
arm mounted on the shaft.

10 19. A memory storage disk handling system as set forth in claim 18,
wherein the arm has a fixed end and a moveable end, the fixed end is fixed with
respect to the shaft, the moveable end includes a cam surface that cams against the
elevator pin to enable the elevator pin to move in response to the servo motor.

15 20. A disk handling system as set forth in claim 19, wherein the stack
retainer means includes three posts oriented to surround lifted disks, each post
includes a hollow portion, the pawls normally extend from the post and retract
within the hollow portions of the posts when a disk lifts past the pawls.